

Original research article

## Combination of Dermoscopy and VIDA Score to Diagnose and Assess Disease Activity of Vitiligo

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### Abstract

**Introduction:** Dermoscopy is a helpful method for vitiligo diagnosis since it allows for the observation of a variety of patterns. These patterns are influenced by disease activity. The activity of vitiligo can be evaluated using the VIDA score, and thus we can grade dermoscopic patterns according to their activity of disease.

**Aim:** To study various dermoscopic patterns in hypopigmentary skin disorders

**Material and Methods:** 46 patients of vitiligo presenting in Dermatology OPD of a tertiary care centre were studied by using dermatoscope. Clinical history and VIDA scoring were evaluated for each patient.

**Results:** Out of 46 patients of vitiligo on the basis of VIDA score, 19 were of stable vitiligo and 27 were of unstable vitiligo. The dermoscopic features which were more common in stable vitiligo were perilesional hyperpigmentation (52.6%) and perifollicular depigmentation (73.7%). The dermoscopic features which were more common in unstable vitiligo were absent pigment pattern (33.3%), perifollicular pigmentation (85.1%), and peppered brown pigment (14.8%).

**Conclusion:** Dermoscopy is an effective tool for assessing patients of vitiligo. It can aid in the rapid and accurate diagnosis. VIDA score can be used to grade these dermoscopic patterns according to activity of disease.

**Keywords:** Dermoscopy, vitiligo, severity, VIDA

### Introduction

Vitiligo is among the most prevalent hypopigmentary disorders, where functional melanocytes are selectively destroyed, resulting in depigmentation of the skin. It appears to affect both men and women equally, and there is no variation in the frequency of occurrence according to race or skin type. It impacts between 0.5% to 1% of the population.

Vitiligo attracts particular attention to the sufferer, especially when it affects visible body parts. Disfiguring physical appearance frequently results in social and sexual shame. Those who are impacted by the loss of skin colour have serious cosmetic and social problems.<sup>1</sup>

One of the main justifications for seeking therapy is the worry that the illness would spread to affect the entire body. Young individuals are particularly affected by the psychological

effects on schooling, marriage, and employment. The effects of vitiligo result in issues with in-laws, sexual relationships, and even divorce. Patients also have to deal with unwanted counsel and bothersome inquiries from friends, family, and well-wishers.<sup>2</sup>

Dermoscopy is an emerging tool which can be used to accurately identify minute features of vitiligo which are not visible to the naked eye and thereafter choose the best course of treatment. It reduces the likelihood of a false diagnosis. VIDA scoring can be used to grade these patterns according to activity of disease.

## MATERIAL AND METHODS

**Study design-** Observational

**Study population-** The present study was conducted in a sample of 46 cases of vitiligo presenting in Dermatology OPD of a tertiary care centre. An informed consent was taken from each patient. An approval from the institutional ethics committee was also taken.

### INCLUSION CRITERIA-

Patients of vitiligo of age group > 2 years

### EXCLUSION CRITERIA-

Patients with postinflammatory hypopigmentation

### Requirements and procedure

For present study, Dermlite DL4 Dermatoscope was used. The site was selected, cleaned and observed through the Dermatoscope. Various features of the lesion such as color, symmetry, pattern, vascular structures were noted. The photographs of the lesion were taken and recorded. Patients clinical history including VIDA score were also recorded.

**Statistical analysis** -Statistical analysis were performed using a SPSS software version 2022. Chi square test was applied to check for any statistical association.

## RESULTS

It was observed that the pigment network was absent in 9 cases (19.6%), reduced in 12 cases (26.1%) and reversed in 8 cases (17.4%). Diffuse white glow was seen in 32 patients (69.6%). The follicular findings revealed leucotrichia in 12 patients (26.1%). 14 cases (30.4%) showed branching telangiectatic vessels. Perifollicular pigmentation was seen in 28 patients (60.9%) while perifollicular depigmentation was seen in 14 patients (30.4%). Interfollicular pigment pattern was seen in 10.9 % of patients. Peppered brown pigment was seen in 4 cases (8.7%).

The margins were well defined in all the patients. Starburst pattern was seen in 9 (19.6%) cases and comet tail pattern in 7 cases (15.2%). Polka dot pattern was also observed in 7 patient (15.2%). Nebulous, amoeboid and petaloid pattern was seen in 24, 15 and 8 patients respectively. Satellite lesions were observed in 2 patients. (table1)

**Table 1: Dermoscopic features in vitiligo**

		No. of cases	%age
Background colour	Diffuse white glow	32	69.6
	White	14	30.4
Pattern of vascular structures	Absent	31	67.4

	Linear vessels	1	2.2
	Branching vessels	14	30.4
Follicular findings	Leucotrichia	12	26.1
Absent pigment pattern		9	19.6
Reduced pigment pattern		12	26.1
Perilesional hyperpigmentation		13	28.3
Perifollicular Pigmentation		28	60.9
Perifollicular depigmentation		14	30.4
Interfollicular pigment		5	10.9
Peppered brown pigment		4	8.7
Reverse pigment network		8	17.4
Margins	Well defined	46	100.0
	Ill defined	0	0
Perilesional changes		15	32.6
Starburst appearance		9	19.6
Polka dot pattern		7	15.2
Comet tail pattern		7	15.2
Amoeboid pattern		15	32.6
Nebulous pattern		24	52.2
Petaloid pattern		8	17.4
Satellite lesions		2	4.3

Out of 46 patients of vitiligo on the basis of VIDA score, 19 were of stable vitiligo and 27 were of unstable vitiligo.

Perilesional changes were seen in 14 patients with a VIDA score of 0. In patients with VIDA score of 1 to 4, just one patient showed perilesional changes. Starburst pattern was seen in 9 patients with a VIDA score of 1 to 4. Starburst pattern( figure 1) was not seen in patients with VIDA score of 0. Polka dot pattern( figure2) was seen in 7 patients with VIDA score of 1 to 4. It was not seen in any patient with a VIDA score of 0. Comet tail pattern( figure3) was seen in 6 patients with VIDA score of 1 to 4. It was also seen in one patient with VIDA score of 0. Leucotrichia was seen in 9 patients with VIDA score of 0. It was also seen in 3 patients with VIDA score of 1 o 4.( table 2 and 3)

**Table 2: VIDA score correlation with perilesional changes**

VIDA SCORE	Starburst appearance		Perilesional changes	
	Present		Present	
	No.	%	No.	%
0	0	0.00	14	73.68
1	2	18.18	0	0.00
2	4	36.36	1	9.09
3	0	0.00	0	0.00
4	3	75.00	0	0.00
Total	9	19.57	15	32.61
	P=0.005		P=0.001	

**Table 3: VIDA score correlation with polka dot pattern**

VIDA SCORE	Comet tail pattern		Polka dot pattern		Leucotrichia	
	Present		Present		Present	
	No.	%	No.	%	No.	%
0	1	5.26	0	0.00	9	47.37%
1	2	18.18	2	18.18	1	9.09%

2	3	27.27	3	27.27	1	9.09%
3	0	0.00	0	0.00	1	100%
4	1	25.00	2	50.00	0	0
Total	7	15.22	7	15.22	12	26.09%
	P=0.517		P=0.070		P=0.267	

The dermoscopic features which were more common in stable vitiligo were perilesional hyperpigmentation (10 patients out of 19 patients; 52.6%) and perifollicular depigmentation (14 patients out of 19 patients; 73.7%). Perifollicular depigmentation was exclusively seen in patients of stable vitiligo.

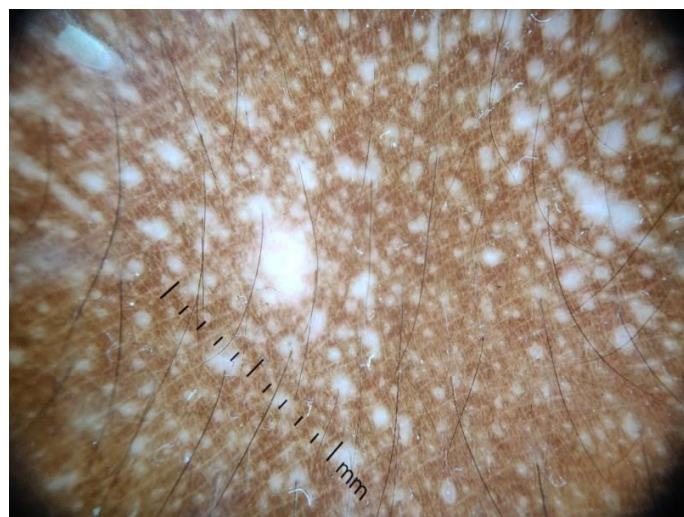
The dermoscopic features which were more common in unstable vitiligo were absent pigment pattern (9 patients out of 27 patients; 33.3%), reduced pigment pattern (8 patients out of 27 patients; 29.6%), reticular pigment pattern (9 patients out of 27 patients; 33.3%), perifollicular pigmentation (23 patients out of 27 patients; 85.1%), interfollicular pigment (4 patients out of 27 patients; 14.8%) and peppered brown pigment (4 patients out of 27 patients; 14.8%). Absent pigment pattern and peppered brown pigment was exclusively seen in patients of unstable vitiligo. (table 4)

**Table 4: Pigment pattern in stable and unstable vitiligo**

Findings		Vitiligo (stable) N=19	Vitiligo (unstable) N=27	P-VALUE
Absent pigment pattern	<b>Present</b>	<b>0</b>	<b>9</b>	<b>0.005</b>
	Absent	19	18	
Reduced pigment pattern	<b>Present</b>	<b>4</b>	<b>8</b>	<b>0.514</b>
	Absent	15	19	
Perilesional hyperpigmentation	<b>Present</b>	<b>10</b>	<b>3</b>	<b>0.002</b>
	Absent	9	24	
Reticular pigment pattern	<b>Present</b>	<b>3</b>	<b>9</b>	<b>0.182</b>
	Absent	16	18	
Perifollicular pigmentation	<b>Present</b>	<b>5</b>	<b>23</b>	<b>0.001</b>
	Absent	14	4	
Perifollicular depigmentation	<b>Present</b>	<b>14</b>	<b>0</b>	<b>0.001</b>
	Absent	5	27	
Interfollicular pigment	<b>Present</b>	<b>1</b>	<b>4</b>	<b>0.305</b>
	Absent	18	23	
Peppered brown pigment	<b>Present</b>	<b>0</b>	<b>4</b>	<b>0.079</b>
	Absent	19	23	
Reverse pigment network	<b>Present</b>	<b>4</b>	<b>4</b>	<b>0.582</b>
	Absent	15	23	



**Figure 1 : starburst appearance**



**Figure 2 : polka dot appearance**



**Figure 3: comet tail appearance**

## Discussion

Out of hundred patients examined 46 patients were diagnosed as vitiligo in our study. When background colour was studied diffuse white glow was seen in 32 patients (69.6%) and white colour was seen in 14 patients (30.4%). Vascular structures were absent in 31 patients (67.4%). Branching vessels were seen in 14 patients (30.4%) of vitiligo. Leucotrichia was seen in 12 patients (26.1%). Absent, reduced and reverse pigment pattern was seen in 19.6%, 26.1% and 17.4% of the patients. A perilesional hyperpigmentation was seen in 28.3% of the patients. Perifollicular pigmentation and perifollicular depigmentation was seen in 60.9% and 30.4% patients respectively. An interfollicular pigment was seen in 10.9% of the patients. Four patients (8.7%) showed peppered brown pigment. Regarding margins of the lesions, a well defined margin was seen in all the cases (46 patients) of vitiligo. Special patterns like starburst pattern, polka dot pattern and comet tail pattern were seen in 19.6%, 15.2% and 15.2% of the patients respectively. Nebulous, amoeboid and petaloid patterns were seen in 52.2 %, 32.6% and 17.4% of the patients respectively. Satellite lesions were seen in 4.3% of the patients

In study by khitam Al- Refu the white glow and perilesional hyperpigmentation were seen in 78% and 30% of the patients of vitiligo respectively, which is similar to our study. Interfollicular pigment was seen in 40% patients in this study, which is higher than our study (seen in 10.9% of the patients) Telangiectasia was seen in 8% of the patients in this study, while it was seen in slightly higher no. of patients in our study (30.4%). In this study the nebulous, amoeboid and petaloid patterns were seen in 72%, 63% and 51% patients, while in our study these patterns were seen in slightly lower no. of patients (52.2%, 32.6% and 17.4%)<sup>3</sup>(Al-Refu, 2019)

In study by Sarvesh S Thatte the reverse pigment network was seen in 20% of the patients, which is similar to our study (17.4%). Diffuse white glow was also seen in very high no. of patients ( 90%) as seen in our study (69.6%). In contrast to our study perilesional hyperpigmentation(3.3%) and perifollicular hyperpigmentation(6.7%) were seen in very lower proportion of patients.<sup>4</sup>(Thatte & Khopkar, 2014). In study by Abhijeet kumar jha et al. the dermoscopic findings of starburst appearance (16.7%), comet tail appearance (21.7%) and perilesional changes ( 28.3%) were in same as in our study. <sup>5</sup>(Jha et al., 2018). In study by krishnendra varma et al. the starburst pattern was seen in 24% patients , which is similar to our study( seen in 19.6%)<sup>6</sup>

The association between stable and unstable vitiligo with perifollicular pigmentation and perifollicular depigmentation is statistically significant. (p=0.001). Reverse pigment pattern was seen in equal number of patients of stable and unstable vitiligo. (4 patients)

In study by Abhijeet Kumar Jha et al perifollicular depigmentation was seen in 86.4% patients of stable vitiligo. This study showed presence of perifollicular pigmentation in 76.3% patients of unstable vitiligo. Both these findings are similar to that of our study.<sup>5</sup>(Jha et al., 2018). In study by Guneet Awal et marginal hyperpigmentation was seen in 91.6% of stable vitiligo patients while absent and reduced pigmentary network were seen more in unstable vitiligo patients similar to our study.<sup>7</sup>(Awal et al., 2022) .In another study by Hesham N Khaled et al absent pigment network was seen more commonly in patients with unstable vitiligo while perifollicular depigmentation was seen more commonly in patients with stable vitiligo.<sup>8</sup>(Khaled et al., 2022). In another similar study by G. Purnima et al the marginal hyperpigmentation was seen more commonly in patients with stable vitiligo.<sup>9</sup>(Purnima et al., 2017). In similar study by Devletshina A.Y. et al perifollicular pigmentation was found to be

more common in patients of unstable vitiligo while perifollicular depigmentation was found to be more common in patients with stable vitiligo.<sup>10</sup>

Perilesional changes were seen in 14 patients with VIDA score of 0, and one patient with VIDA score of 2. Thus, the perilesional changes more common in patients with stable vitiligo (VIDA score 0). The association between VIDA score and perilesional changes is statistically significant ( $p=0.001$ ). Leucotrichia was seen in 9 patients with VIDA score of 0, and just 3 patients with VIDA score range of 1 to 4. Thus, leucotrichia was more common in patients with stable vitiligo (VIDA score 0). Starburst pattern was seen in 9 patients with VIDA score range of 1 to 4, and it was not seen in any patient with VIDA score of 0. Thus starburst pattern was found to be exclusive feature of patients with unstable vitiligo (VIDA score 1 to 4). Polka dot pattern was seen in 7 patients with VIDA score range of 1 to 4, and it was absent in patients with VIDA score of 0. Thus implying that polka dot pattern was exclusively seen in patients of unstable vitiligo (VIDA score 1 to 4). Comet tail pattern was seen in 6 patients with VIDA score of 1 to 4, and one patient with VIDA score of 0. Thus comet tail pattern was more common in patients with unstable vitiligo (VIDA score 1 to 4). According to our knowledge the VIDA score relation with dermoscopic changes in vitiligo has not been studied in any study.

In study by G. Purnima et al although no correlation was done with VIDA score, they showed features of starburst pattern, polka dot pattern and comet tail pattern to be more common in patients with unstable vitiligo similar to our study.<sup>9</sup>(Purnima et al., 2017). Leucotrichia was found to be more common in patients with stable vitiligo in study by Abhijeet Kumar Jha et al similar to our study.(Jha et al., 2018)<sup>5</sup>and similar finding was seen in study by Hesham N Khaled et al.<sup>8</sup> (Khaled et al., 2022). In study by Guneet Awal et al. polka dot appearance and starburst appearance were seen more commonly in patients of unstable vitiligo similar to our study.<sup>7</sup>(Awal et al., 2022)

## Conclusion

By looking at the observations we can conclude that dermoscopy not only helps in accurate diagnosis of the patient but it can also help in knowing about the disease activity of vitiligo. As seen in this study some dermoscopic features seen in vitiligo are more common in stable vitiligo, while other features are more common in unstable vitiligo. This has been shown in the study by correlation of VIDA score with various patterns. VIDA score can be used to grade these dermoscopic patterns according to disease activity. Thus in vitiligo dermoscopy not only helps in diagnosis but also helps in knowing the disease activity and thus helps in deciding the course of management of the patients. Moreover dermoscopy is a noninvasive procedure which can help us in avoiding invasive procedures like biopsy. It can be done on OPD basis and thus helps in preventing delays in diagnosis. In the last we can conclude that dermoscopy is an effective, accurate, noninvasive and easy to perform procedure which can be used to reach rapid and accurate diagnosis of vitiligo.

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